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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,668	11/12/2003	Teng Xu	2003B116	2591

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EXAMINER

BULLOCK, IN SUK C

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/712,668	Applicant(s) XU ET AL.	
	Examiner In Suk Bullock	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 13-15 recite the limitation "the oxygenate removal zone." There is insufficient antecedent basis for this limitation in the claims. Also, it is not clear if the recitation "the oxygenate removal zone" is an error and applicants mean the pretreatment zone or if there is an oxygenate removal zone in the claimed process.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 22, and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 01/62382.

The WO 01/62382 reference teaches a process for making an olefin product from an oxygenate feed comprising contacting a silicoaluminophosphate molecular sieve having a porous framework structure with an oxygenate composition in a pretreatment

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zone to form an integrated hydrocarbon co-catalyst within the porous framework and contacting the pretreated molecular sieve with oxygenate feedstock to form an olefin-containing product. The oxygenated feedstock comprises at least one organic compound that contains at least one oxygen atom, such as ethers and more specifically dimethyl ether. The integrated hydrocarbon co-catalyst is present at about 0.1-23 wt.% based on the total weight of the silicoaluminophosphate molecular sieve. The catalyst becomes deactivated as a result of a carbonaceous deposits forming on the catalyst during the olefin conversion reaction. Thus, the deactivated catalyst is regenerated to obtain a regenerated catalyst having a carbonaceous content of less than 2 wt.%. The regenerated catalyst is then sent to the pretreatment zone. The olefins produced by the process, i.e., ethylene and propylene, can be used to produce polyolefins in the presence of a catalyst such as metallocene. See page 4, line 29 to page 5, line 24; page 6, lines 1-16; page 9, lines 1-9; page 11, lines 2-8; page 12, lines 11-21; page 13, lines 18-21; page 16, lines 16-21; page 19, line 26 to page 20, line 7; and especially claims 1, 3, 4, 10, 12, and 14.

The cited reference is deemed to anticipate the claimed dimethyl ether composition because the reference teaches pretreating the silicoaluminophosphate molecular sieve with an oxygenate composition. Dimethyl ether is taught as an example of an oxygenate feedstock.

The reference is also deemed to anticipate the claimed carbon content of the molecular sieve in the pretreatment zone because the reference teaches regenerating

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the coked catalyst to a catalyst having a carbonaceous content of less than 2 wt% and then sending the regenerated catalyst to the pretreatment zone.

The reference is deemed to anticipate the claimed hydrocarbon content of the pretreated molecular sieve because the reference teaches the integrated hydrocarbon co-catalyst is present at about 0.1-23 wt.% based on the total weight of the molecular sieve.

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 9-15, 17, 21, 22, 42, and 45-47 are rejected under 35 U.S.C. 102(e) as being anticipated by Williams et al. (6,657,022).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

The Williams et al. reference teaches a process for producing olefins from an oxygenate feedstock using a SAPO molecular sieve catalyst comprising an integrated hydrocarbon co-catalyst within the porous framework of said catalyst. The hydrocarbon material is introduced or produced from an oxygenated feedstock into the porous

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framework of the silicoaluminophosphate molecular sieves under appropriate conditions. Desirably, co-catalyst formation is carried out at a temperature above about 250° C. See col. 3, lines 49-63; col. 4, lines 53-65; and col. 7, lines 53-64. The co-catalyst is present at about 0.1-23 wt.% based on the total weight of the silicoaluminophosphate molecular sieve (col. 11, lines 3-18). Because it is difficult to distinguish between carbonaceous co-catalyst composition and carbonaceous coke, it is desirable to maintain the catalyst within the reactor at an average carbonaceous content of from about 2 wt.% to about 30 wt.% (col. 15, lines 10-28). The oxygenate feedstock includes dimethyl ether (col. 11, line 57 to col. 12, line 6). The oxygenate conversion process is performed at temperature range of 200° to about 700° C and at a WHSV of at least 1 hr⁻¹ (col. 13, lines 9-15 and col. 14, lines 6-14). Oxygenate conversion rate is maintained in the range of about 50% to about 90% (col. 13, lines 52-65). The olefins produced from the process can be polymerized to form polyolefins in the presence of a catalyst (col. 17, lines 45-59).

The reference is deemed to anticipate the claimed dimethyl ether composition because the reference teaches pretreating the silicoaluminophosphate molecular sieve with an oxygenate composition. Dimethyl ether is in the broad class of oxygenate.

The reference is also deemed to anticipate the claimed carbon content of the molecular sieve in the pretreatment zone because the reference teaches regenerating the coked catalyst to a catalyst having a carbonaceous content of less than 2 wt% and then sending the regenerated catalyst to the pretreatment zone.

The reference is deemed to anticipate the claimed hydrocarbon content of the pretreated molecular sieve because the reference teaches the integrated hydrocarbon co-catalyst is present at about 0.1-23 wt.% based on the total weight of the molecular sieve.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4-8, 16, 18-20, 23-41, 43, and 44 are rejected under 35 U.S.C. 103(a) as being obvious over Williams et al. (U.S. Patent 6,657,022).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

The Williams et al. reference teaches a process for producing olefins from an oxygenate feedstock using a SAPO molecular sieve catalyst comprising an integrated hydrocarbon co-catalyst within the porous framework of said catalyst. The hydrocarbon material is introduced or produced from an oxygenated feedstock into the porous

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framework of the silicoaluminophosphate molecular sieves under appropriate conditions. Desirably, co-catalyst formation is carried out at a temperature above about 250° C. See col. 3, lines 49-63; col. 4, lines 53-65; and col. 7, lines 53-64. The co-catalyst is present at about 0.1-23 wt.% based on the total weight of the silicoaluminophosphate molecular sieve (col. 11, lines 3-18). Because it is difficult to distinguish between carbonaceous co-catalyst composition and carbonaceous coke, it is desirable to maintain the catalyst within the reactor at an average carbonaceous content of from about 2 wt.% to about 30 wt.% (col. 15, lines 10-28). The oxygenate feedstock includes dimethyl ether (col. 11, line 57 to col. 12, line 6). The oxygenate conversion process is performed at temperature range of 200° to about 700° C and at a WHSV of at least 1 hr⁻¹ (col. 13, lines 9-15 and col. 14, lines 6-14). Oxygenate conversion rate is maintained in the range of about 50% to about 90% (col. 13, lines 52-65). The olefins produced from the process can be polymerized to form polyolefins in the presence of a catalyst (col. 17, lines 45-59).

The differences between the Williams et al. reference and the claimed invention are that the reference does not teach the pretreatment temperature is the same or higher than the oxygenate reaction temperature and the reference does not teach wherein the dimethyl ether that contacts the silicoaluminophosphate molecular sieve is obtained by separating dimethyl ether from the olefin product.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have determined the optimum pretreatment temperature and the

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optimum reaction temperature and thereby determine the temperature differential between the two zones.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Williams et al. reference by employing unreacted dimethyl ether feed to form an integrated hydrocarbon co-catalyst because it would be cost effective to recycle unreacted feed and utilize said unreacted feed to form an integrated hydrocarbon co-catalyst. Further, Williams et al. has taught that the hydrocarbon material is introduced or produced from an oxygenated feedstock into the porous framework of the silicoaluminophosphate molecular sieves and thereby lead one of ordinary skill in the art to utilize unreacted dimethyl ether feedstock to pretreat the molecular sieve.

With respect to the claimed limitations directed to the WHSV at which the dimethyl ether composition is contacted with the molecular sieve in the pretreatment zone, it is within the level of one having ordinary skill in the art at the time the invention was made to have determined the optimum conditions to achieve desired results.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patents 6,734,330 and 6,743,474 teach catalyst pretreatment in oxygenate to olefins conversion process comprising a silicoaluminophosphate molecular sieve

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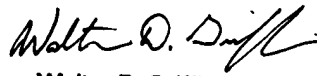
having an integrated hydrocarbon co-catalyst within the porous framework of said molecular sieve.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to In Suk Bullock whose telephone number is 571-272-5954. The examiner can normally be reached on Monday - Friday 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

I.B.


Walter D. Griffin
Primary Examiner